REMARKS

In paragraph 2 of the final Action, claims 1 and 3-7 were rejected under 35 U.S.C. 112, second paragraph. In paragraph 5 of the final Action, claims 1 and 3 were rejected under 35 U.S.C. 102(b) as being anticipated by Admitted Prior Art (APA) disclosed in Fig. 4. In paragraph 7 of the final Action, claims 4-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of Shoji or Wang et al or JP '176.

In view of the rejections, claim 6 has been cancelled, and the subject matter of cancelled claim 6 has been incorporated into claim 1. Also, the term used in claim 1 has been amended to obviate the rejection under 35 U.S.C. 112, second paragraph. Claim 1 now amended is patentable over the cited references.

In claim 1, first pressure detecting means is attached to the flow path between the control valve and the flow resistance for detecting a pressure thereat, and the second pressure detecting means is attached to the flow path between the flow resistance and the sample introducing part for detecting a pressure thereat. The control means controls the opening degree of the control valve so that flow amount and pressure in the flow path can be controlled at a predetermined value based on the first and second pressure detecting means.

In the invention, the flow amount is calculated based on a value of the second pressure detecting means and a differential pressure value between the first and second pressure detecting means, and the flow pressure is obtained from the second pressure detecting means.

Namely, in the invention, the first and second pressure detecting means are attached to the flow path to sandwich the flow resistance. In this structure, the flow amount and pressure can be obtained by the first and second pressure detecting means.

In APA, i.e. the embodiment of Fig. 4, a differential pressure sensor 15 measures a differential pressure of a flow resistance 14. Also, a pressure sensor 19 is attached to the sample introducing part 17 to measure a pressure thereat. The flow amount in the path 13 is calculated based on the values including the differential pressure sensor 15 and the pressure sensor 19 by equation (2) on page 2 of the specification.

In APA as shown in Fig. 4, the flow amount in the path 13 can be measured, and controlled. However, as explained on page 3, lines 3-6 of the specification, since the conventional fluid control assembly has been made to control only one of the flow or the pressure, it was required to use different assemblies according to a purpose.

In the present invention, one fluid control assembly having the first and second pressure detecting means with the flow resistance therebetween can measure and control the flow amount and flow pressure. Therefore, it is not required to change the assembly or control system in measuring the flow amount and flow pressure.

In detail, the first pressure detecting means is attached to the flow path between the control valve and the flow resistance for detecting a pressure thereat, and the second pressure detecting means is attached to the flow path between the flow resistance and the sample introducing part for detecting a pressure thereat.

In APA, the differential pressure sensor 15 and the pressure sensor 19 measuring the inner pressure of the sample introducing part 17 are used. APA does not disclose the two pressure detecting means of the invention.

Further, in claim 1, the control means controls the opening degree of the control valve so that flow amount and pressure in the flow path can be controlled at a predetermined value by the first

and second pressure detecting means. In APA, the pressure in the flow path is not controlled.

In the invention, further, the flow amount is calculated based on a value of the second pressure detecting means and a differential pressure value between the first and second pressure detecting means, and the flow pressure is obtained from the second pressure detecting means. The features of the invention are not disclosed or suggested in APA.

In Shoji, a gas chromatograph includes a resistance tube 3, a pressure sensor 21 at an upstream side of the resistance tube 3, a control valve 5 at a downstream side of the resistance tube 3, and a differential pressure sensor 4 for measuring a difference between the resistance tube 3. In Shoji, although the pressure sensor 21 is located at the upstream side of the resistance tube 3, there is no pressure sensor at the downstream side of the resistance tube 3, and the differential pressure sensor 4 is used to measure the difference of pressure between the resistance tube 4. Therefore, none of the structure of the invention is disclosed or suggested in Shoji.

In Wang et al., a proportional valve 414, a flow sensor 416 and a pressure sensor 420 are attached to a flow path before an injection port 412 for a packed column 418. The pressure sensor 420 is located between the injection port 412 and the proportional valve 414 (or flow sensor 416), but there is no pressure sensor at the upstream side of the proportional valve 414. The structure of the invention such that the first and second pressure detecting means are located to sandwich the flow resistance is not disclosed or suggested.

In JP '176, a pressure sensor 1b is located between a control valve 1a and a differential pressure control part 2 formed of a laminar flow element 2a and differential pressure sensor 2b. In the invention, the first and second pressure detecting means are

located to sandwich the flow resistance. Although the pressure sensor 1b is used in JP '176, the arrangement of the pressure sensor 1b is entirely different from the structure of the invention.

In sum, in each of the references, one pressure sensor and differential pressure sensor (Shoji and JP '176) or mass flow controller (Wang et al.) are used. Therefore, the cited references do not show or even suggest two pressure detecting means on both sides of the flow resistance, nor detect pressure and flow amount at a simple structure, as in the present invention.

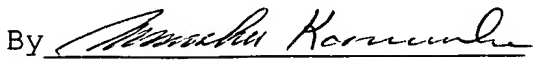
In the invention, the first and second pressure detecting means are located to sandwich the flow resistance, so that the flow amount is calculated based on a value of the second pressure detecting means and a differential pressure value between the first and second pressure detecting means, and the flow pressure is obtained from the second pressure detecting means.

The Examiner's rejection is based on the disclosure of the present invention, and simply collects parts of the invention from the cited references. None of the references measures the flow amount and pressure by the simple structure.

Even if the cited references are combined, claim 1 is not obvious from the cited references.

Reconsideration and allowance are earnestly solicited.

Respectfully Submitted,

By 

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